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PEAR BLIGHT AND ITS CONTROL

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Pear blight, more generally referred to as fire blight, is apparently native to North America, where it probably occurred on native hosts before the introduction of the cultivated pears. Although first described in this country in 1794, its cause was not determined until 1878. The devastating effect of this disease is responsible in a large measure for the reduction of commercial pear growing in Florida. The disease is caused by the bacterial organism, *Bacillus amylovorus* (Burr.) Trev. It is largely disseminated by insects (bees, flies, aphids, etc.) and birds (woodpeckers); also, it may be carried by man on pruning and other implements which have been employed on diseased trees.

Blight is of first importance in the state as a disease of pears, but in other states it is a severe parasite of apples and quince trees as well. It is not confined to these, however, for it sometimes occurs on loquat, hawthorn, wild crab, cherry, apricot, plums, and other hosts. Only a few of the best varieties of pears are sufficiently resistant to permit growing successfully on a commercial basis. Some of the Asiatic species, such as *Pyrus calleryana*, have shown considerable promise for use as resistant stocks, and one other, particularly *Pyrus ussuriensis*, may prove of great value in breeding tests for varietal resistance.

Pear blight attacks the blossoms, leaves, twigs, immature fruit, limbs, and trunk of the tree. Since all phases of the disease are seldom found on a single tree, such designations as blossom blight, leaf blight, twig blight, fruit blight, cankers (on limbs and trunk), or collar blight (at base of trunk), are used to indicate the type of infection.

Blossom blight is characterized by a browning and wilting of the blossoms soon after they open. This discoloration usually passes quickly to the young fruit. However, fruit spot or blight may result from direct infections on the immature fruit, and in pear orchards one frequently sees blackened, half-grown fruits with drops of the bacterial ooze on their surfaces. The exudation of pearl-colored droplets from diseased tissues is a characteristic symptom of blight, particularly during and following wet weather. From infected blossoms the disease may proceed down the stems, involve adjacent leaves, and cause them to turn brownish black and to wilt so that a blighted tuft of blossoms and leaves is produced. Leaves frequently are invaded directly with the result that triangular, marginal lesions are produced, or in other instances, large portions of the leaf may be involved. These invaded areas are not uniform in color, but manifest localized areas which vary in color from brown to black. Affected leaves remain firmly attached to the spurs and twigs.

Twig blight results from direct infections in succulent shoots or indirectly from blossom and leaf infections. The disease in the twig may advance both upward and downward from the original point of infection. As a result, dropping terminal shoots and twigs, with black, shriveled and curled leaves, are produced. These stand out in marked contrast to the normal green foliage.

From the twigs the disease may advance into larger limbs or into the main body of the tree, killing the invaded tissues as the disease advances. In these parts of the tree deep cankers are often produced. Cankers may remain restricted as to further development or may continue to spread slowly or rapidly, according to conditions, throughout the season or for more than one season. In active cankers the bark is usually slightly darker than normal and appears to be water-soaked. After drying out the cankers are slightly sunken and the following spring they may blister and rupture around the outer edges, being accompanied by a profuse bacterial exudation from the cracks. In these cankers, referred to as holdover cankers, the bacteria may remain alive from one season to the next, frequently serving as centers from which the disease may be spread to the blossoms and young twigs and to other healthy trees.

When collar blight develops at the base of the trunk the foliage may wilt and become brown, or suddenly the number and size of the leaves may be reduced and their appearance may become pale or yellow, the result frequently being a premature defoliation.

CONTROL

Pear blight is favored by environmental conditions that tend to produce a succulent and rapid growth of the host, such as excessive rainfall, warm, cloudy weather, and the application of large quantities of nitrogenous fertilizers. It is retarded by hot, dry weather and other environmental factors which inhibit rapid growth. Hence, in combating the disease, cultural practices should be regulated wherever possible so as to prevent excessive succulent growth. The use of cover crops to utilize surplus soil moisture, the avoidance of heavy pruning as well as the application of extraordinary amounts of fertilizers will facilitate a growth condition unfavorable to blight. Fungicides are of little value in controlling pear blight.

Since this disease is largely transmitted by sucking insects, these should be repelled by the application of contact insecticides containing nicotine, pyrethrum, or similar ingredients. A further precautionary measure would be to avoid the planting of other susceptible hosts in the vicinity of the pears.

The most effective weapon against pear blight at the present time consists of tree surgery. Since the cankers on the trunk and branches are the principal sources of infection for the new growth in the spring, the trees should be inspected carefully in the fall and spring and all diseased parts should be removed and treated. All cankers on limbs or trunk of the tree should be cut out during the fall or winter, removing the tissues well beyond the diseased area. In severe cases, the entire branch may be removed at a point several inches below the canker. Small branches bearing cankers or lesions should be removed likewise. In the spring all new growth which shows the disease should be removed as soon as detected. All removed or diseased material should be collected and burned at once. Following the removal of blighted tissue, the cut surface should be sterilized. Further, before a cut is made into healthy tissue the pruning implement should be sterilized. A recommended sterilizing solution for cut surfaces consists of the following:

Mercuric chloride		1 ounce
Mercuric cyanide		1 ounce
Glycerine	3 parts	3½ to 4 gallons
Water	1 part	

To the above solution some water-soluble dye may be added to enable one to distinguish treated surfaces. After sterilization the wound should be allowed to dry and then given a coat of asphalt paint or lead paint to protect the cut surface against loss of water and decay.